Designing India : VISION 2020

By RICHA VARMA

Indian students develop imaginative ideas for future cities.

Robotic research centers, aeronautical museums, multi-level organic farming, Braille signposts and ramps everywhere for the disabled—a spirited group of Indian youngsters has planned these for their city of the future.

Fourteen teams of 11th graders from schools in and around New Delhi participated in the Future Cities India 2020 competition in January. The challenge was to come up with a plan for the redevelopment of the 2010 Commonwealth Games international zone and design infrastructure solutions keeping in mind that all temporary structures—media centers, practice grounds, entertainment facilities and transportation system—would be dismantled after the games. The competition encourages students to use their skills to design infrastructure for 2020, when it is estimated that more than half of India's population will live in its largest cities.

Now in its second year, Future Cities India 2020 is sponsored by the Government of India's Department of Science and Technology in association with Bentley Systems Inc., a leading American software provider for infrastructure management.

Like the U.S. version of the contest, the Indian competition aims to encourage students' interest in math, science and engineering.

The students worked for five months on environmentally sustainable plans and tabletop models to showcase their ideas. They then presented the designs before judges at the American Center in New Delhi.

"Future Cities India 2020 gave us an opportunity to serve our country in a special way, and it was an opportunity we did not take lightly. But envisioning what India would look like 12 years from now wasn't easy," says Ajaypat Jain from Apeejay School in Noida, Uttar Pradesh, whose team went on to win the top award of Rs. 100,000.

The task of using real-world data to devise solutions to future woes was hard to resist. "Along the way, we realized that if we wanted help, there was only one way to get it: ask," says Gargi Maheshwari, a member of the sole all-girls team in the competition, representing New Delhi's Mount Carmel School. Her colleague Rishba Yadav says that visits to the site also helped cement their ideas. "We went to a lot of government offices, spoke to dozens of officers till we got our answers. We also involved more and more people and welcomed suggestions to improve our project."

Besides teaching skills such as time

Photographs by HEMANT BHATNAGAR

For more information:

National Engineers Week Future City Competition
http://www.futurecity.org/competition.shtm

Future Cities India 2020
http://www.futurecitiesindia2020.co.in/

management, problem solving and teamwork, the competition gave students an introduction to civil, electrical, chemical and mechanical engineering.

Scott T. Lofgren, global director of Bentley Empowered Careers Network, which is part of Bentley Systems Inc., says: "Future Cities India 2020 is a tribute to all those who have developed innovative design solutions to help address India's real-world infrastructure needs." Though he is not sure if the students' ideas will be used by the administration, the competition has "definitely stirred an interest in infrastructure engineering."

Ayush Srivastav of DAV Public School in Gurgaon, Haryana, says he learned soldering and making electrical connections, things he had only read about. "There were times we burnt our hands handling the hot charcoal to make the miniature roads in our model. The experience will remain with me as it gave me a confidence of attempting the unknown," Srivastav says of the efforts of his team, which came second.

"We were trained in using state-of-the-art modeling software like MXROAD and MicroStation V8XM by Bentley. We learnt about 3D analysis and new innovations in architecture," says Apeejay's Ajaypat Jain, who is 16 years old. "We even devised a new technology like...the robot mechanized navigation system for a very futuristic building system called the Simulation Center."

Says 16-year-old Akansha Sharma from Apeejay School in Faridabad, Haryana, "The long hours of research and work that has gone into this project have sparked a desire in me to carry this on. In fact, we often discuss that we should form an architecture firm when we grow up."

Sharma's teacher, Mamta Arora, says the students sometimes put in 11-hour sessions designing and redesigning their presentations. Each team was guided by a teacher, often a specialist in computers or science, and an engineer who volunteered.

Despite the disparity of design, one idea cut across all groups: making the project environment friendly. From solar-powered vehicles, solar panels on rooftops and rainwater harvesting to using bricks made from fly ash, and no-vehicle zones, the students wanted their future cities to be pollution-free.

"Global warming is the issue of the day and I'm sure by 2020, we will be in the middle of a severe climate crisis. We don't want to leave a large carbon footprint for our kids. And anyway, planning ahead never hurt anyone. It's better to think now than repent later," says Akansha Sharma, whose favorite pastime is bird-watching.

Spending what was the busiest winter vacation of their lives, the students agreed they had had an incomparable experience.

"The project was challenging and we did get stuck at times but our teachers and our team spirit always rescued us," says Ajaypat Jain. "More than the prize, it is the experience that will remain with us."

Left: The team from Apeejay School in Noida explains its design concept to an audience member. From left are team mentor and biology teacher Pinky Mathur, students Ajaypat Jain, E.R. Subramanian, Gagan Anand and Anshul Singh.

Below: Students Zoya Khan, Pourav Banerjee and Abhinav Mittal of New Delhi's Apeejay School interact with Scott T. Lofgren (center), global director of Bentley Empowered Careers Network and Jugal Makwana of Bentley Systems in India.

Future Dilemma:

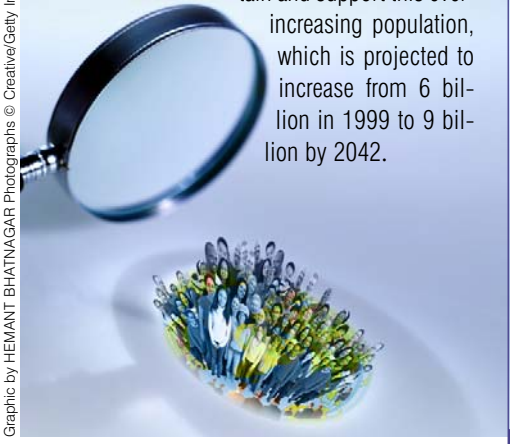
Too Many People, Too Little Space

From 13 percent in 1900, the global proportion of urban dwellers increased to 49 percent in 2005. According to projections by the United Nations Populations Division, 60 percent of the world's population, or about 4.9 billion people, are expected to live in cities by 2030.

By 2015, Mumbai will be the world's second most populous city, with an estimated population of 20.9 million. New Delhi and Kolkata will remain among the most populous cities, and it is also anticipated that Mumbai and New Delhi will grow faster than any other city in the world.

Population scientist Joel E. Cohen, author of *How Many People Can the Earth Support?,* said at a panel discussion organized by the American Academy of Arts and Sciences: "From now to 2030, the world will need to build the equivalent of a city of one million in developing countries every five days," reported a *New York Times* blog.

The question is, how long can the earth sustain and support this ever-increasing population, which is projected to increase from 6 billion in 1999 to 9 billion by 2042.



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